



AN ISO 9001 : 2008 COMPANY & NABL ACCREDITED LABORATORY AS PER ISO/IEC 17025:2005

4, 7TH MAIN MALLESWARAM, BANGALORE -3

Certificate No.: T- 4358

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : CP-2017-03-24-03 Date: 28-03-17

Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Address : Kodigehalli Sub Division, BBMP, Bangalore.

Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8

Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.

Customer's Reference : BBMP/EE/BTP/WO/143/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 24-03-17

Sample ID No : 2017-03-24-03/01

Customer ID : PCC

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M15 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 28/03/2017

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen	Cross sectional area	Weight of the sample	Failure Load	Compressive strength	Average Compressive Strength
					(mm)	(Sq.mm)	(kg)	(KN)	(N/mm ²)	(N/mm ²)
1	PCC	M15	21/03/2017	28/03/2017	148.98 X 151.67 X 150.55	22596	8.132	279.5	12.4	12.4
2	PCC	M15	21/03/2017	28/03/2017	149.91 X 150.11 X 150.22	22503	8.105	265.5	11.8	
3	PCC	M15	21/03/2017	28/03/2017	150.54 X 150.65 X 150.18	22679	8.172	297.1	13.1	

Note:
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All information furnished by Customer/Representative
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Samples will be disposed after 30 days from the date of issue of test certificate

Prepared by
Harsitha

Harsitha



FOR CIVIL Pro.

R KARTHIK RECHAN
Authorized Signatory
Quality Manager

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Kodigehalli Sub Division,
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****End of Report****

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HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL
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4, 7TH MAIN MALLESWARAM, BANGALORE -3

Certificate No.: T- 4358

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : CP-2017-03-24-03 Date: 18-04-17

Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Address : Kodigehalli Sub Division, BBMP, Bangalore.

Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8

Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.

Customer's Reference : BBMP/EE/BTP/WO/143/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 24-03-17

Sample ID No : 2017-03-24-03/02

Customer ID : PCC

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M15 / 28 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 18/04/2017

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen	Cross sectional area	Weight of the sample	Failure Load	Compressive strength	Average Compressive Strength
					(mm)	(Sq.mm)	(kg)	(KN)	(N/mm ²)	(N/mm ²)
1	PCC	M15	21/03/2017	18/04/2017	151.21 X 150.11 X 150.34	22698	8.122	376.8	16.6	16.9
2	PCC	M15	21/03/2017	18/04/2017	150.26 X 150.32 X 150.11	22587	8.197	388.5	17.2	
3	PCC	M15	21/03/2017	18/04/2017	150.54 X 149.11 X 151.76	22447	8.123	379.4	16.9	

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Certificate No.: T- 4358

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : CP-2017-03-20-04 Date: 24-03-17

Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Address : Kodigehalli Sub Division, BBMP, Bangalore.

Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8

Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.

Customer's Reference : BBMP/EE/BTP/WO/143/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 20-03-17

Sample ID No : 2017-03-20-04/01

Customer ID : Drain Concrete

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 24/03/2017

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen	Cross sectional area	Weight of the sample	Failure Load	Compressive strength	Average Compressive Strength
					(mm)	(Sq.mm)	(kg)	(KN)	(N/mm ²)	(N/mm ²)
1	Drain Concrete	M20	17/03/2017	24/03/2017	149.22 X 150.54 X 149.22	22464	8.165	404.3	18.0	17.9
2	Drain Concrete	M20	17/03/2017	24/03/2017	150.65 X 150.34 X 151.32	22649	8.152	412.2	18.2	
3	Drain Concrete	M20	17/03/2017	24/03/2017	151.88 X 150.15 X 150.11	22805	8.154	401.4	17.6	

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Certificate No.: T-4358

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : CP-2017-03-20-04 Date: 14-04-17

Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Address : Kodigehalli Sub Division, BBMP, Bangalore.

Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8

Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.

Customer's Reference : BBMP/EE/BTP/WO/143/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 20-03-17

Sample ID No : 2017-03-20-04/02

Customer ID : Drain Concrete

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 28 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 14/04/2017

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen	Cross sectional area	Weight of the sample	Failure Load	Compressive strength	Average Compressive Strength
					(mm)	(Sq.mm)	(kg)	(KN)	(N/mm ²)	(N/mm ²)
1	Drain Concrete	M20	17/03/2017	14/04/2017	151.43 X 150.41 X 150.87	22777	8.176	494.3	21.7	22.0
2	Drain Concrete	M20	17/03/2017	14/04/2017	151.66 X 150.26 X 150.42	22788	8.114	515.0	22.6	
3	Drain Concrete	M20	17/03/2017	14/04/2017	150.26 X 150.18 X 150.27	22566	8.154	491.9	21.8	

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4, 7TH MAIN MALLESWARAM, BANGALORE -3

Certificate No.: T- 4358

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID : CP-2017-03-09-05 Date: 10-03-2017
Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8
Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.
Customer's Reference : BBMP/EE/BTP/WO/143/2016-17
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 09-03-17
Sample ID No : 2017-03-09-05-01
Sample Type : Birla super 53 grade
Reference to BIS codes : IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification ,
IS 4031 (Part 1,2,3,4,5, 6,11):1988
IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4
IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5
IS 4031 Part 3, Determination of Soundness, Clause 5, Clause 6
IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5
IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5
IS 4031 Part 11, DETERMINATION OF DENSITY , Clause 6
Date of test : 09-03-17

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	Fineness by dry sieving (%)	2.95	—
2	Finess by Air permeability method (m ² /kg, Min)	287.5	225m ² /kg, Min
3	Density (gm/cc)	3.21	—
4	Standard Consistency (%)	28.0%	Not specified
5	Initial Setting time	160 minutes	Not less than 30 minutes
6	Final Setting time	290 minutes	Not more than 600 minutes
7	Soundness (Le Chatelier's Method)	1.5mm	Not more than 10 mm

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TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID : CP-2017-03-09-05 Date: 06-04-2017
Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8
Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.
Customer's Reference : BBMP/EE/BTP/WO/143/2016-17
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 09-03-17
Sample ID No : 2017-03-09-05-01
Sample Type : Birla super 53 grade
Reference to BIS codes : IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification ,
IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5
IS 4031 Part 6, Determination of Compressive Strength, Clause 6
Date of test : 09-03-17

Compressive Strength			
Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	3 Days	28.5N/mm ²	Not less than 27 N/mm ²
2	7 Days	38.5N/mm ²	Not less than 37 N/mm ²
3	28 Days	55.0N/mm ²	Not less than 53 N/mm ²

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Certificate No.: T- 4358

TEST REPORT ON COARSE AGGREGATES

Lab ID : CP-2017-03-09-05 Date: 11-03-2017
Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8
Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.
Customer Reference : BBMP/EE/BTP/WO/143/2016-17
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 09-03-17
Sample ID No : 2017-03-09-05/02(b)
Sample Type/ Size : 20mm down size coarse aggregate
Reference to BIS codes : IS: 383:2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1,3,4) RA2011
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids, Water Absorption
IS 2386 Part 4: Mechanical Properties
Date of test : 09-03-17

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:

Total weight taken : 5000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	40 mm	0	0	0	100	100
2	20 mm	423	423	8.46	91.54	90-100
3	10 mm	2537	2960	59.2	40.8	25-55
4	4.75 mm	1636	4596	91.92	8.08	0-10
5	Pan	404	5000	100	0	-

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TEST REPORT ON COARSE AGGREGATES

Lab ID : CP-2017-03-09-05
Sample ID No : 2017-03-09-05/02(b)

Date: 11-03-2017

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	13.2	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	12.5	
3	Specific Gravity	2.58	—
4	Bulk Density(Loose) (Kg/l)	1.52	—
5	Bulk Density(Compacted) (Kg/l)	1.58	—
6	Water Absorption(%)	0.26	—
7	Aggregate crushing Value(%)	23.26	Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface.
8	Aggregate Impact Value(%)	22.14	30% for Aggregates to be used in concrete for wearing Surface, 45% for Aggregates to be used in concrete other than for wearing Surface.

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TEST REPORT ON COARSE AGGREGATES

Lab ID : CP-2017-03-09-05 Date: 11-03-2017
Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8
Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.
Customer's Reference : BBMP/EE/BTP/WO/143/2016-17
Source of Sample : Sample supplied by Agency
Sample condition : Satisfactory
Date of Receipt : 09-03-17
Sample ID No : 2017-03-09-05/02(a)
Sample Type : 40mm down size coarse aggregate
Reference to BIS codes : IS: 383:2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1,3,4) RA2011
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids, Water Absorption
IS 2386 Part 4: Mechanical Properties
Date of test : 09-03-17

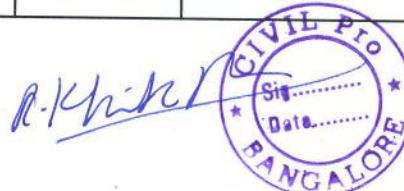
SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:

Total weight taken : 15000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	80 mm	0	0	0.0	100	100
2	40 mm	1215	1215	8.1	91.9	90-100
3	20 mm	5320	6535	43.6	56.4	30-70
4	10 mm	6255	12790	85.3	14.7	10-35
5	4.75 mm	1637	14427	96.2	3.8	0-5
6	Pan	573	15000	100.0	0	---

Assistant Executive Engineer,
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TEST REPORT ON COARSE AGGREGATES

Lab ID : CP-2017-03-09-05
Sample ID No : 2017-03-09-05/02(a)

Date: 11-03-2017

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	12.26	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	13.34	
3	Specific Gravity	2.68	—
4	Bulk Density(Loose) (Kg/l)	1.51	—
5	Bulk Density(Compacted) (Kg/l)	1.54	—
6	Water Absorption(%)	0.21	—

Note:

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4, 7TH MAIN MALLESWARAM, BANGALORE -3

Certificate No.: T- 4358

TEST REPORT OF FINE AGGREGATE

Lab ID : CP-2017-03-09-05 Date: 11-03-17

Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Address : Kodigehalli Sub Division, BBMP, Bangalore.

Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8

Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.

Customer's Reference : BBMP/EE/BTP/WO/143/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 09-03-17

Sample ID No : 2017-03-09-05/03

Sample Type : Fine Aggregate

Reference to BIS codes : IS 383 : 2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1, 3) RA2012
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids, Water Absorption

Date of test : 09-03-17

Total weight taken : 1000 grams

Sl.no	Sieve Size	Weight Retained (gms)	Cumulative Weight Retained (gms)	% Cumulative Weight Retained	% Passing	Requirement as per IS 383:2016			
						Grading Zone I	Grading Zone II	Grading Zone III	Grading Zone IV
1	10 mm	0	0	0	100	100	100	100	100
2	4.75 mm	25	25	2.5	97.5	90-100	90-100	90-100	95-100
3	2.36 mm	127	152	15.2	84.8	60-95	75-100	85-100	95-100
4	1.18 mm	275	427	42.7	57.3	30-70	55-90	75-100	90-100
5	600 micron	137	564	56.4	43.6	15-34	35-59	60-79	80-100
6	300 micron	219	783	78.3	21.7	5-20	8-30	12-40	15-50
7	150 micron	154	937	93.7	6.3	0-10	0-10	0-10	0-15
8	Pan	63	1000	100	0	---	---	---	---

Result : The tested Sample Conforms to Grading Zone II

Page 1/2



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4, 7TH MAIN MALLESWARAM, BANGALORE -3

Certificate No.: T-4358

TEST REPORT OF FINE AGGREGATE

Lab ID : CP-2017-03-09-05
Sample ID No : 2017-03-09-05/03

Date: 11-03-17

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS 383:2016
1	Water Absorption(%)	2.64	—
2	Specific Gravity	2.58	—
3	Material finer than 75 micron(%)	5.80	Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10%

Note:

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**TEST RESULTS OF BITUMEN CONTENT FOR SDBC
(AS per IRC:SP:-11-1984)**

Lab ID : CP-RW-2017-04-05-02 Date: 06-04-2017
Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8
Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.
Customer Reference : BBMP/EE/BTP/WO/143/2016-17
Source of Sample : Sample supplied by Agency
Date of Receipt : 05-04-2017
Sample ID No : 2017-04-05-02/01
Type of Mix : SDBC (Semi Dense Bituminous Concrete)
Date of test : 06-04-2017

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	475	474
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	5.00	5.20
4	Average percentage	%	5.10	

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2
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4, 7TH MAIN MALLESWARAM, BANGALORE -3

Lab ID : CP-RW-2017-04-05-02

Date: 06-04-2017

Sample ID No : 2017-04-05-02/01

AFTER EXTRACTION (Trail-1)

Oven Dry Weight(gm) : 475

IS Sieve Size(mm)	Weight Retained(gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-2)
13.2	0	0	0	100.0	100
9.5	41	41	8.6	91.4	90-100
4.75	208	249	52.4	47.6	35-51
2.36	110	359	75.6	24.4	24-39
1.18	41	400	84.2	15.8	15-30
0.3	26	426	89.7	10.3	9-19
0.075	23	449	94.5	5.5	3-8

AFTER EXTRACTION (Trail-2)

Oven Dry Weight(gm) : 474

IS Sieve Size(mm)	Weight Retained(gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-2)
13.2	0	0	0	100.0	100
9.5	40	40	8.4	91.6	90-100
4.75	210	250	52.7	47.3	35-51
2.36	103	353	74.5	25.5	24-39
1.18	46	399	84.2	15.8	15-30
0.3	29	428	90.3	9.7	9-19
0.075	24	452	95.4	4.6	3-8

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4, 7TH MAIN MALLESWARAM, BANGALORE -3

Certificate No.: T- 4358

TEST REPORT ON BITUMEN

Lab ID : CP-2017-03-25-03 Date: 28-03-17

Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Address : Kodigehalli Sub Division, BBMP, Bangalore.

Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8

Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.

Customer's Reference : BBMP/EE/BTP/WO/143/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 25-03-17

Sample ID No : 2017-03-25-03/01

Sample Type : Bitumen

Reference to BIS codes : IS: 1201-1220(1978) (Reaffirmed-2004)

Date of test : 27-03-17

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	93	80 to 100
2	Softening Point, °C	48	Min. 40°C
3	Ductility, cm	85	Min. 75cm
4	Flash point, °C	227	Min. 220°C
	Fire point, °C	239	

Note:

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Certificate No.: T- 4358

TEST REPORT ON BITUMEN

Lab ID : CP-2017-03-25-03 Date: 28-03-17

Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Address : Kodigehalli Sub Division, BBMP, Bangalore.

Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8

Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.

Customer's Reference : BBMP/EE/BTP/WO/143/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 25-03-17

Sample ID No : 2017-03-25-03/01

Sample Type : Bitumen

Reference to BIS codes : IS: 1201-1220(1978) (Reaffirmed-2004)

Date of test : 27-03-17

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	93	80 to 100
2	Softening Point, °C	48	Min. 40°C
3	Ductility, cm	85	Min. 75cm
4	Flash point, °C	227	Min. 220°C
	Fire point, °C	239	

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Certificate No.: T- 4358

DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE (IS 2386 (Part 1) 1963 (RA 2007))

Lab ID : CP-RW-2017-03-23-01 Date: 24-03-17

Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Address : Kodigehalli Sub Division, BBMP, Bangalore.

Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8

Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.

Customer Reference : BBMP/EE/BTP/WO/143/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 23-03-17

Sample ID No : 2017-03-23-01-01

Type of Mix : Coarse Aggregate for WMM (Wet Mix Macadam)

Date of test : 23-03-17

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	13.6%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	12.8%	
Combined Flakiness and Elongation Index for WMM	26.4%	

Note:-

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Certificate No.: T- 4358

TEST REPORT OF AGGREGATE IMPACT VALUE

IS: 2386 Part IV

Lab ID : CP-RW-2017-03-23-01 Date: 24-03-17
 Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
 Address : Kodigehalli Sub Division, BBMP, Bangalore.
 Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8
 Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage,
 Customer Reference : BBMP/EE/BTP/WO/143/2016-17
 Source of Sample : Sample supplied by Agency
 Sample Condition : Satisfactory
 Date of Receipt : 23-03-17
 Sample ID No : 2017-03-23-01-01
 Type of Mix : Coarse Aggregate for WMM (Wet Mix Macadam)
 Date of test : 23-03-17

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	295.0	295.0
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	73.9	74.0
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	220.7	220.7
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.4	0.3
5	Aggregate impact value	(B/A)*100	25.0	25.1
6	Aggregate impact value (Mean of two tests)	Percentage	25.1	

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TEST RESULTS OF GRADATION FOR WMM

Lab ID : CP-RW-2017-03-23-01 Date: 24-03-17
Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8
Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.
Customer Reference : BBMP/EE/BTP/WO/143/2016-17
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 23-03-17
Sample ID No : 2017-03-23-01-01
Type of Mix : WMM (Wet Mix Macadam)
Date of test : 23-03-17
Oven Dry Weight : 11585 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0	100	100
45	337	337	2.91	97.09	95-100
22.4	2256	2593	22.38	77.62	60-80
11.2	2184	4777	41.23	58.77	40-60
4.75	2268	7045	60.81	39.19	25-40
2.36	1645	8690	75.01	24.99	15-30
0.6	668	9358	80.78	19.22	8-22
0.075	2105	11463	98.95	1.05	0-5

Note:-

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Certificate No.: T- 4358

**DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF
COARSE AGGREGATE (IS 2386 (Part 1) 1963 (RA 2011))**

Lab ID : CP-RW-2017-03-30-01 Date: 01-04-2017
Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8
Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.
Customer Reference : BBMP/EE/BTP/WO/143/2016-17
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 30-03-2017
Sample ID No : 2017-03-30-01/01
Type of Mix : Coarse Aggregate for SDBC (Semi Dense Bituminous Concrete)
Date of test : 30-03-2017

Result:

Flakiness Index	13.2%
Elongation Index	12.6%
Combined Flakiness & Elongation Index for SDBC	25.8%

Comments:

Maximum allowable Flakiness & Elongation Index For SDBC is 30 %

Note:-

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Certificate No.: T- 4358

TESTS RESULTS ON AGGREGATE IMPACT VALUE (IS:2386 Part IV)

Lab ID : CP-RW-2017-03-30-01 Date: 02-04-2017
Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8
Agency : Sri. Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.
Customer Reference : BBMP/EE/BTP/WO/143/2016-17
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 30-03-2017
Sample ID No : 2017-03-30-01/01
Type of Mix : Coarse Aggregate for SDBC (Semi Dense Bituminous Concrete)
Date of test : 30-03-2017

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	290.5	290.5
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	71.6	72.5
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	218.4	217.4
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.5	0.6
5	Aggregate impact value	(B/A)*100	24.65	24.96
6	Aggregate impact value (Mean of two tests)		24.80	

Note:-

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Certificate No.: T- 4358

SPECIFIC GRAVITY AND WATER ABSORPTION TEST IS:2386 (Part III)

Lab ID : CP-RW-2017-03-30-01 Date: 02-04-2017

Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Address : Kodigehalli Sub Division, BBMP, Bangalore.

Agency : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8

Project Name : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.

Customer Reference : BBMP/EE/BTP/WO/143/2016-17

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 30-03-2017

Sample ID No : 2017-03-30-01/01

Type of Mix : Coarse Aggregate for SDBC (Semi Dense Bituminous concrete)

Date of test : 30-03-2017

Sl.No	Details of Observations	Index	Unit	Test 1	Test 2	Mean Value
1	Weight of Wet aggregates + Basket suspended in water	A1	grams	2295	2250	
2	Weight of Empty Basket suspended in water	A2	grams	791	791	
3	Weight of Aggregates in water	A=A1-A2	grams	1504	1459	
4	Weight of Saturated Surface Dry aggregate	B	grams	2432	2348	
5	Weight of oven dried aggregate	C	grams	2424	2340	
6	Specific gravity	$C/(B-A)$		2.61	2.63	2.62
7	Apparent Specific gravity	$C/(C-A)$		2.63	2.66	2.65
8	Water absorption	$100*(B-C)/C$	Percent	0.33	0.34	0.34

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**TEST RESULTS OF GRADATION FOR SDBC
IS 2386 (Part 1) 1963 (RA 2007)**

Lab ID : CP-RW-2017-03-30-01 Date: 02-04-2017
Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward
Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.
Customer Reference : BBMP/EE/BTP/WO/143/2016-17
Source of Sample : Sample supplied by the Agency
Sample Condition : Satisfactory
Date of Receipt : 30-03-2017
Sample ID No : 2017-03-30-01/01
Type of Mix : SDBC-Plant (Semi Dense Bituminous Concrete)
Date of test : 30-03-2017
Oven Dry Weight(gm) : 5000

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-2)
13.2	0	0	0	100	100
9.5	396	396	7.92	92.08	90-100
4.75	2178	2574	51.48	48.52	35-51
2.36	1128	3702	74.04	25.96	24-39
1.18	535	4237	84.74	15.26	15-30
0.3	308	4545	90.90	9.10	9-19
0.075	229	4774	95.48	4.52	3-8
PAN	226	5000	100.00	0.00	0

Note:-

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4, 7TH MAIN MALLESWARAM, BANGALORE -3

TESTS RESULTS ON STABILITY OF MIX

Lab ID : CP-RW-2017-03-30-01 Date: 02-04-2017
Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8
Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.
Customer Reference : BBMP/EE/BTP/WO/143/2016-17
Source of Sample : Hot Mix Plant, Bangalore
Sample Condition : Satisfactory
Date of Receipt : 30-03-2017
Sample ID No : 2017-03-30-01/01
Type of Mix : SDBC (Semi Dense Bituminous Concrete)
Date of test : 30-03-2017

The results of the tests conducted on the Semi Dense Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-16
1	Marshal Stability at 60°C, KN	10.19	10.48	8.2KN(min)
2	Marshal flow at 60°C, mm	3.15	3.12	2-4
3	Percent air Voids	3.79	3.95	3-5
4	Percent Voids in mineral Aggregate(VMA %)	13.38	13.45	13-15
5	Percent Voids filled with Bitumen(VFB %)	70.32	70.0	65-75
6	Density, g/cc	2.24	2.25	—

Note:-

The results pertain to the samples received and tested.

All information furnished by Customer/Representative

Any correction in the report will make this report invalid.

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Samples will be disposed after 30 days from the date of issue of test certificate

Prepared By:
Harshitha



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R. KORTHIK RECHAN

Authorized Signatory
Quality Manager

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4, 7TH MAIN MALLESWARAM, BANGALORE -3

TEST REPORT OF AGGREGATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID : CP-RW-2017-03-30-01 Date: 02-04-2017
Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8
Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.
Customer Reference : BBMP/EE/BTP/WO/143/2016-17
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 30-03-2017
Sample ID No : 2017-03-30-01/01
Type of Mix : SDBC (Semi Dense Bituminous Concrete)
Date of test : 30-03-2017

Type of Binder : 80/100
% of Binder Used : 5.0%
Weight of Aggregate : 200.0 gm
Weight of Binder : 10.0 gm
Temperature of water bath : 40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.5	1.5	98.0	Minimum Retained Coating 95%
2	97.5	2.5		
3	98.0	2.0		

Note:

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4, 7TH MAIN MALLESWARAM, BANGALORE -3

TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID : CP-RW-2017-03-30-01 Date: 02-04-2017
Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address : Kodigehalli Sub Division, BBMP, Bangalore.
Project Name : Improvements to drain and asphaltting to roads in Balaji layout in Ward no.8
Agency : Sri.Vasanth. R. #28, Thimmaiah layout, Nagashettyhalli, RMV 2nd stage, Bangalore.
Customer Reference : BBMP/EE/BTP/WO/143/2016-17
Source of Sample : Sample supplied by Agency
Sample Condition : Satisfactory
Date of Receipt : 30-03-2017
Sample ID No : 2017-03-30-01/01
Type of Mix : SDBC (Semi Dense Bituminous Concrete)
Date of test : 30-03-2017

Type of Binder : 80/100
% of Binder Used : 5.0%
Weight of Aggregate : 200.0 gm
Weight of Binder : 10.0 gm
Temperature of water bath : 40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
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Note:

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